

IN THE CLAIMS:

Claims 1, 4, 6, and 9 have been amended herein. All of the pending claims 1 through 10 are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Currently Amended) A semiconductor assembly comprising:
a substrate having a plurality of circuits on a portion of a surface thereof;
a semiconductor die having a plurality of bond pads located on an active surface thereof and having a back side surface;
a plurality of solder balls connecting at least a portion of the plurality of bond pads of the semiconductor die to at least a portion of the plurality of circuits of the substrate;
one of a glob top material and a low viscosity polymeric material filling any space between the substrate and the semiconductor die;
a gel elastomer contacting at least a portion of the back side surface of the semiconductor die, wherein the gel elastomer is compliant, adhesive, and filled with a thermally conductive material; and
a heat sink cap having a portion thereof contacting a portion of the substrate covering the gel elastomer, the semiconductor die, and the plurality of solder balls, ~~and a portion of the heat sink cap having the edge portion thereof substantially contacting the~~ substrate, the heat sink cap contacting at least a portion of the gel elastomer.
2. (Original) The semiconductor assembly of claim 1, wherein the heat sink cap includes a plurality of fins thereon.
3. (Original) The semiconductor assembly of claim 1, wherein the gel elastomer includes a cross-linked silicone.

4. (Currently Amended) A semiconductor assembly comprising:
a substrate having a surface having a plurality of circuits on a portion thereof;
a semiconductor die having a plurality of bond pads located on a first portion of an active surface thereof and having a back side surface;
a plurality of solder balls connecting at least a portion of the plurality of bond pads of the semiconductor die to at least a portion of the plurality of circuits of the substrate;
one of a glob top material and a low viscosity polymeric material filling any space between the substrate and the semiconductor die;
a gel elastomer contacting a portion of the back side surface of the semiconductor die, wherein the gel elastomer is a cross-linked silicone gel, compliant, adhesive, and filled with a thermally conductive material; and
a heat sink cap having the edge portion thereof substantially contacting a portion thereof in contact with a portion of the substrate and a portion of the gel elastomer, the heat sink cap covering the gel elastomer, the semiconductor die, the plurality of solder balls, and the at least a portion of the substrate located thereunder.

5. (Original) The semiconductor assembly of claim 4, wherein the heat sink cap includes a plurality of fins thereon.

6. (Currently Amended) An assembly comprising:
a substrate having a plurality of circuits on a portion thereof;
a semiconductor die having a plurality of bond pads located thereon and having a back side surface;
a plurality of solder balls connecting at least a portion of the plurality of bond pads of the semiconductor die to at least a portion of the plurality of circuits of the substrate;
one of a glob top material and a low viscosity polymeric material filling any space between the substrate and the semiconductor die;
a compliant, adhesive, and filled with a thermally conductive material, gel elastomer contacting at least a portion of the back side surface of the semiconductor die; and

a heat sink cap having the edge thereof substantially contacting a portion thereof ~~contacting a portion of~~ the substrate covering the compliant[[,]] adhesive, ~~and filled with~~ a thermally conductive material[[,]] filling the gel elastomer, the semiconductor die, the plurality of solder balls, ~~and~~ a portion of the substrate, and the heat sink cap contacting at least a portion of the gel elastomer.

7. (Original) The semiconductor assembly of claim 6, wherein the heat sink cap includes a plurality of fins thereon.

8. (Previously Presented) The semiconductor assembly of claim 6, wherein the compliant, adhesive, and filled with a thermally conductive material, gel elastomer includes a cross-linked silicone.

9. (Currently Amended) An assembly comprising:
a substrate having a plurality of circuits on a portion thereof;
a semiconductor die having a plurality of bond pads and having a back side surface;
a plurality of solder balls connecting at least a portion of the plurality of bond pads of the semiconductor die to at least a portion of the plurality of circuits of the substrate;
one of a glob top material and a low viscosity polymeric material filling any space between the substrate and the semiconductor die;
a compliant, adhesive, and filled with a thermally conductive material, gel elastomer contacting a portion of the back side surface of the semiconductor die, and
a heat sink cap having an edge thereof substantially contacting a portion thereof ~~in contact with a portion of~~ the substrate and a portion of the compliant[[,]] adhesive, ~~and filled with~~ a thermally conductive material[[,]] substantially filling the gel elastomer, the heat sink cap covering the compliant[[,]] adhesive, ~~and filled with a thermally conductive material[[,]]~~ the gel elastomer, the semiconductor die, the plurality of solder balls, and at least a portion of the substrate.

10. (Original) The semiconductor assembly of claim 9, wherein the heat sink cap includes a plurality of fins thereon.